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An investigation of mesoscale wave processes in the surface layer using synchronous measurements of atmospheric parameters and admixtures

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Abstract

We present the results of experimental investigations of mesoscale wave processes in the surface layer based on the data of multiyear synchronous minute-by-minute measurements of atmospheric parameters and admixtures on a network consisting of five stations spaced 1-6 km apart. The concentrations of sulfur dioxide, carbon oxide, nitrogen oxide and dioxide; the mass concentration of aerosol; and the temperature and pressure, wind velocity and direction, and relative humidity were measured synchronously. Polarization relations for all the measured parameters have been obtained for different periods and wavelengths. The azimuth of mesoscale wave propagation is detected to depend on the mean wind velocity. It is shown that the densities of elastic and horizontal energies of mesoscale waves are essentially different on different scales. © 2009 Pleiades Publishing, Ltd.

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